

Conferences vs. Journals: Throwing the baby out with the bath water?

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Criticism of the conference model should be put in context. Evidence suggests that the essential features of this model have emerged as responses to challenges posed by current trends of scientific research and the impact of the new techno-economic paradigm: the age of Information and Communication Technology [8]. The economic, social and technical impact of this revolution on the whole scientific research cycle is beginning to be assessed [5, 10]. At the center of it is our discipline, computing science (CS), that in this process is reflecting on its identity and relationship with other disciplines [4, 11].

This context seems indispensable when discussing today's problems of scientific evaluation, in particular the Conference vs. Journal (CvJ) debate. This debate, also, would benefit from systematic historical and sociological studies of these practices. This ground would help to ponder the criticism of the conference model by showing that a great percentage of the problems like the rapid increase in the number of submissions, skimpy and slow reviews, declining paper quality, pressures from academia and publishers, are affecting the whole system, be it conference or journal [7, 12]. In this article we briefly develop these arguments.

Evaluation in Classical Sciences. Although their origins can be traced to scientific societies, it is in the nineteenth century that the journal and peer review models as we know them today emerged. The system evolved without major changes until the second half of the 20th century, when it was shaken by the new printing and communication technologies (photocopies, email, Web, etc.). Editorial boards evolved from a group of people whose main goal was to find enough material to fill the pages of the journal, into a huge filtering system whose goal turned to enforce minimum standards and discard unsound works [2]. Recognized today as the essence of scientific evaluation, peer review has been lately the center of heated discussions in all disciplines [1, 9, 12]. The journal model, in its origin had two driving forces: the need to incorporate more articles into the publishing process, and to encourage scientists to disclose their work (by giving credit and prestige to the author) [3].

The first one is not needed anymore, but a new one has emerged: to measure “productivity” in a system of science where accountability plays an increasing role [10].

Regarding our CvJ debate, another facet of this history seems more relevant. Scientific societies held periodic meetings where their members presented their works and advancements in their disciplines. At the beginning, journal contents were almost a compilation of these presentations. The method did not scale and these practices split: on one hand today’s journals, and on the other, periodic meetings of the society where members used to present their findings and ideas. Journals got under evaluation methods to check the relevance of submissions, while meetings kept a natural filter: to be member of the society. These two forms of communicating scientific research made their own way.

The advent of Conferences. For some sociological reason, a strange event, a mix of meetings and journals, was developed in our discipline. Opinions and remembrances ascribe this phenomena to the particular nature of the “products” of the discipline; the perception that CS has a different speed from other sciences; the few journals available and the long delays in refereeing and publishing; facilities given by traveling in the jet age; the avoidance of wasting time in polishing for a journal material already presented in conferences. (See CACM, vol 52, Nos. 1,4,5,8 and links from there). The need to test these hypotheses becomes evident when reading the most widespread of them: “Quick development of the field required quick review and distribution of results”, which although intuitive, does not explain conferences (*Letters* in other fields give much “faster” review and dissemination times). The phase transitions of this process are also important. Table 1, showing rough statistics based on the information of the ACM Digital Library, indicates that conferences/workshops are influential in the field at least since the early 1970’s when the numbers exploded. The series LNCS, which publishes mainly CS events proceedings, began in the seventies with a dozen a year and since then it has grown to reach currently more than five hundred a year. The data, although illustrative, is by any means apt to derive definitive conclusions, because parameters like attendance, impact, spreading, relevance, etc. of these events is not weighed. Definitively a systematic study is needed to put the CvJ debate on solid grounds.

Conferences vs. Journals. A big part of the discussions on CvJ focuses on criticism on the current conference model. Bad quality of papers, splintering of communities, few attendees, reviews done under extreme time and workload pressures, are among the typical complaints. Many of them are also found in current criticism of journals. Thus to contribute to the debate, it seems important to isolate characteristics that are inherent to conferences. Below we present a first approximation.

- *Time constraints for the researcher.* Enforcing research *deadlines* puts time pressure. On the contrary, journals allow submissions at any moment, giving more freedom and relaxed pace to research. Deadlines are slightly being incorporated into journals, e.g. “special issues”, Proc. of the VLDB Endowment, etc. Regarding time constraints *for reviewers*, the conference practice is being increasingly adopted by journals, by fixing review times.

| Period | Journals | Conf. (still existing) | Conf. (not existing today) |
|-------------|----------|------------------------|----------------------------|
| Before 1960 | 1 | 0 | 2 |
| 1960-64 | 0 | 2 | 0 |
| 1965-69 | 1 | 7 | 0 |
| 1970-74 | 0 | 11 | 3 |
| 1975-79 | 4 | 4 | 2 |
| 1980-84 | 3 | 8 | 2 |
| 1985-89 | 0 | 23 | 14 |
| 1990-94 | 4 | 22 | 18 |
| 1995-99 | 3 | 46 | 13 |
| 2000-04 | 9 | 55 | 25 |
| 2005-09 | 13 | 38 | 6 |

Table 1: Number of ACM Journals and Conferences by birth date

- *Space constraints.* Limiting the size of articles puts pressure on the form of communication. Only the essential without details is presented. The motivations seem to be time review constraints and fast communication. This notion is rather foreign to classical journals, although *Letters* have incorporated it long ago.
- *Boolean decisions.* This is one of the distinctive characteristics of the conference model. As the number of submissions grow, many journals are incorporating sharper decisions methods (limited resubmission rounds, etc.) Under the think/act dichotomy, this method incentives action rather than deliberation.
- *Discussion post-publication.* Real testing of hypothesis begins after the conference (where only a sketch –“extended abstract– is expected) under an open-world scrutiny. On the contrary, journals expect articles to be definitive once published. Testing is done before by reviewers in a closed world.
- *Evaluation by batch.* Evaluation is done on a set of submissions at a time. Hence, implicitly the value of a paper is weighed against their peers in the same event. This method introduces the notion of ranking among submissions and bias in favor of fashions, groups, and mainstream developments.
- *Changing board of editors.* The notion of *Program Committee* (PC) is in my opinion one of the cornerstones of the system. Complemented by the Steering Committee ensuring long term stability, PC’s reflect and enforce the mobility of areas, topics, people and criteria. Today journal editorial boards are rather closed and stable groups, not without inbreeding, limiting innovation.
- *Dissemination of ideas done by the producer.* I think this is the kernel of the conference model, and a feature not sufficiently highlighted in the discussion on CvJ.

Conferences/workshops are (easily) organized by the interested researchers in a new field, who initiate a spiral of contributions/evaluation/dissemination that ultimately will shape a new area if persisting in time. The key point is that there is no need of intermediaries, and the growth process parallels that of the community. In this sense, it resembles the origins of scientific societies that shaped current branches of knowledge. (There is a significant link between this feature and current discussions on the future of publishing, open journals, etc.)

- *Physical presence, face-to-face meeting.* This has been assumed to be the most distinctive characteristic of the conference model. What is surprising and intriguing is that the community leading virtual communications and immaterial production is the one that seems more prone to physical meetings. Is this a contradiction? Let us remark that in our age of rapid communications, the other characteristics of conferences discussed do not need physical contact or presence.

Being aware of the role and power of –and in favor of enforcing– face-to-face communication and physical bonds, I rather disagree that it is the essence of what has rocketed the conference model.

Final Comments. The conference model reflects fairly well our times. Like it or not, the first three characteristics discussed are typical of today’s social and economical rhythms, and fit very well modern time constraints in any area. Arguments stating that the conference “has fractured the discipline and skewered it towards short-term deadline driven research” point rightly to consequences, not to causes. In fact, these are general trends observable in all disciplines. Many of the aspects blamed to conferences are part of a new paradigm of science development (called “Mode 2” in the literature) characterized by the steering of research priorities, accountability of science and commercialization of research. This mode of development –their advocates state–, would have superseded the classical model (“Mode 1”) characterized by the hegemony of theoretical or, at any rate, experimental science, by an internally-driven taxonomy of disciplines, and by the autonomy of scientists and their host institutions, the universities [10].

Definitively, when reading the CvJ debate, one cannot but bring to mind broader discussions on the transformation of the scientific method in our age. I think we should incorporate them into our discussion in order to fairly assess the contributions of conferences to current scientific developments.

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